Using citizen science for coastal data collection

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Citizen science has come of age in New Zealand and there are a wide range of opportunities for coastal scientists and practitioners to make use of, or contribute to it. This article provides an overview of some recent highlights and progress with a focus on projects supported by NatureWatch NZ, a national platform for citizen science in New Zealand.

The term "citizen science" refers to a broad range of activities where information is collected by the community. The reasons for citizen science vary and there is a wide spectrum of interests for which it can be useful. Casual observation, surveys and monitoring are common contexts for citizen science. Often it involves information collected by volunteers as part of designing or implementing hands-on community initiatives.

There are many examples of citizen science in New Zealand that support environmental protection and restoration projects. These activities may generate knowledge that is not necessarily stored or even transmitted beyond a few individuals. Projects designed to crowd-source information from the wider community are a different form of citizen science. These may be initiated by science professionals and lay people alike. A related, though less structured, version occurs where researchers and agencies seek to mine data from sources already held by the community. Supporting and unlocking all of these knowledge sources has become a central focus within the citizen science movement in recent years.

Though the potential for citizen science to fill information gaps is huge, questions around data consistency and quality assurance have long been an "Achilles heel" in practice. Overcoming this is important for unlocking the potential of citizen science as a reliable source of data for purposes other than the very local contexts in which much of it is collected. This win-win is a worthy goal and can be encouraged through coordination and the development of standardised methods. However, promoting onerous procedures to volunteers and community groups is not likely to be a silver bullet and there will always be community projects with unique data collection needs. Thankfully, solutions may be found through the use of smart technologies.

Some of these aspects have been addressed in the development of NatureWatch NZ (NWNZ). This is a national-level data collection and database facility with many user-defined functions. These functions provide support for a wide range of data collection needs. There are an increasing number of coastal

Supported by NatureWatch NZ, CoastBlitz at Tapuae Marine Reserve in Taranaki is just one example of citizen science in action.

CoastBlitz, Tapuae Marine Reserve.

citizen science projects on NWNZ and an ever-increasing dataset of coastal species' observations. Although it is possible to keep records private, nearly all of the data is available under a Creative Commons licence using the search functions to locate records of interest. Downloads from the database are supported in a range of file formats. Note that for threatened species the point data coordinates are automatically obscured and a proxy coordinate inserted within a 10-kilometre radius. The true coordinates remain on the database and are available on request.

Some of the quality assurance features of the NWNZ platform are the identotron function to prevent typos leading to junk entries, and the "ID please" service to assist identification. The latter is a service that is crowd-sourced by the platform. An in-built quality assurance process for confirming identifications also uses crowd-sourcing based on photographic evidence. This function adds a "research grade" tag to observations that have been verified by other members. Research grade can be applied as a filter on any subset of the database. If you are familiar with one or more coastal taxa, please consider contributing to the expert community who are the engine room behind these unique functions.

Some of the other useful features are places and projects. Places are user-defined polygons. Many are preloaded and you can also create your own at any

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time. All records can be filtered by place so specifying a place of interest provides a very useful tool for database queries. Projects are the real heart of the platform. They allow users to create their own data entry page to support the collection of observations about any living thing or anything associated with it, such as tracks, signs or nests. Any number of custom data fields can be added to a project to create a template for online data entry with the data being all stored permanently in a cloud-hosted database. The template can be used directly in the field on a tablet or on a smartphone using mobile apps. You can also download it as a spreadsheet to create a hardcopy for fieldwork if desired. Records can also be bulk uploaded in batches. All of these functions are great for supporting monitoring projects or BioBlitzs and other surveys. There are many potential uses in education programmes that include exploring the IT aspects of the platform, as well as the data or the design of the citizen science projects hosted on it.

Some of the many coastal projects using NWNZ include monitoring of marine mammals, fish species, penguins and other birds. NWNZ is used for school-based education projects, such as Project Hotspot in Taranaki, and several CoastBlitz projects in different parts of New Zealand. To get involved with any of these efforts or to initiate something similar use the NWNZ messaging functions to get in contact with the people involved. NatureWatch NZ is an example of modern technology helping to combine the efforts of many people making observations. For existing and new environmental projects it provides a flexible tool for recording and storing observations and is a growing source of useful information.

Central government news

Marlborough Sounds Salmon Working Group established

The Marlborough District Council and the Ministry for Primary Industries have established a Marlborough Sounds Salmon Working Group to consider options to implement the Best Management Practice Guidelines for Salmon Farming in the Marlborough Sounds.

The working group began meeting in July and have been asked to provide recommendations to Marlborough District Council and the Government on implementing the guidelines later this year.

Working group membership includes representation from Marlborough District Council, Ministry for Primary Industries, key community and interest groups, iwi and New Zealand King Salmon. Both the Department of Conservation and the Ministry for the Environment will also input into the working group process.

The working group's recommendations will not be binding, but will inform future planning work for both the Marlborough District Council and central government.

Science strategy on environmental issues to be developed

New Zealanders have an opportunity to have their say on the environmental science priorities facing the nation.

A discussion paper released in mid-July will lead to a conservation and environment science "roadmap" identifying priority areas for scientific research during the next 20 years.

An independent Strategic Advisory Group, led by the Prime Minister's Chief Science Advisor, Sir Peter Gluckman, helped develop the paper alongside Ministry for the Environment and Department of Conservation staff.

The discussion paper, along with an online consultation tool and more information, can be found on the Ministry for the Environment website: http://www.mfe.govt.nz/more/about-us/conservation-and-environment-science-roadmap.

Consultation will close at 5.00 pm on 7 September 2016.

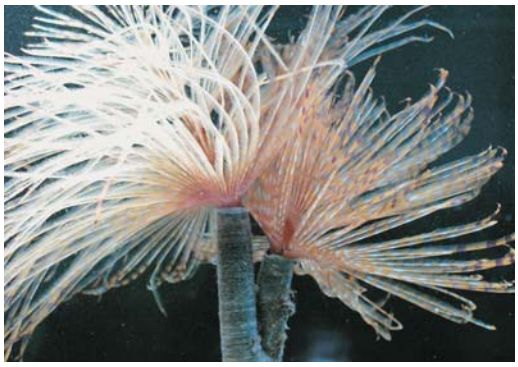
Biosecurity 2025 – consultation

The government is asking New Zealanders to give their views on the future of New Zealand's biosecurity system. Biosecurity 2025 is being developed to ensure that our biosecurity system continues to protect New Zealand against harmful pests and diseases. A new Biosecurity 2025 direction statement, which will replace *Tiakina Aotearoa – Protect New Zealand* (the 2003 biosecurity strategy), will be published following public consultation.

Consultation and public submissions close 9 September 2016.

To review the discussion document visit: https://www.mpi.govt.nz/protection-and-response/overview/biosecurity-2025/.

A video on biosecurity in New Zealand has been developed by the Ministry for Primary Industries and is available at: https://www.youtube.com/watch?v=VXb2ic-kroc.



Protecting New Zealand's biodiversity from marine pests, such as the Mediterranean fanworm, is an important part of Biosecurity 2025. Photo: MPI.